DOCUMENT RESUME

ED 303 704 CG 021 401

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TITLE Assessing Successful Adaptation to College.
PUB DATE Aug 88
NOTE 15p.; Paper presented at the Annual Meeting of the American Psychological Association (96th, Atlanta, GA, August 12-16, 1988).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Freshmen; Engineering Education; *Expectation; Higher Education; Majors (Students); Science Education; *Student Adjustment; *Student Attitudes; Test Validity
IDENTIFIERS *Student Adaptation to College Questionnaire

ABSTRACT

This study was conducted to investigate the expected and actual adjustment of a select sample of students, engineering and science majors, at a public university in a rural midwestern community. Matriculating freshmen (N=247) who were engineering and science students completed the anticipated adjustment form of the Student Adaptation to College Questionnaire (SACQ) during a freshman orientation program and completed the actual adjustment form of the SACQ in October of their freshman year. The results were consistent with findings from previous studies in that the students, as a group, experienced a substantial decrease in actual adjustment as compared to expected adjustment. Subjects showed a particularly large discrepancy in the academic adjustment category. Examination of data from normative institutions and from this particular institution suggests that this was caused by lower scores on actual adjustment rather than by overly high expectations prior to college entry. It appeared that the engineering and science students tested in this study experienced one aspect of the freshman myth more intensely than did students in previous studies. The findings support the use of the SACQ as a measure of college adjustment for engineering and science students. (NB)

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Assessing Successful Adaptation to College

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Prepared for the 1988 Annual Convention

of the

American Psychological Association

Atlanta, Georgia August 12-16, 1988

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Psychometric Properties of the Student Adaptation to College Questionnaire with Engineering and Science Students

Baker and Siryk (1984) developed the Student Adaptation to College Questionnaire (SACQ) to compensate for what they believed was a shortage psychometrically sound tools to measure adjustment to college. The availability of accurate and reliable indices has much potential in both theoretical and practical applications and is congruent with the current stud development focus on assessment. Researchers have found a relationship between the academic, social, personal-emotional, and institutional attac ment subscales of the SACQ and other variables such as alienation (Baker & Siryk, 1980), sexual adjustment (Steinberg, 1983), prior interracial experience (Graham, Baker & Wagner, 1984), and student retention (Baker & Siryk, 1986).

One of the most interesting applications of the SACQ has been in the investigation of the "freshman myth" which is the tendency of students entering college to have overly optimistic expectations about their upcoming experience. Baker, McNeil and Siryk (1985) developed an 'anticipated adjustment' form of the survey. They hypothesized that discrepancies between expectations about adjustment to college and actual adjustment, i.e., the freshman myth, would be related to grade point average (GPA) us of psychological services, and retention. In general, they found that a large discrepancy was related to lower GPA, greater use of psychological services, and lower retention rates. Further, they noted some differences in the data collected at the two institutions employed in their study. They felt a need for further validation of their instrument in additional

institutions with differing student populations. The present study is an extension of this type of research in a setting different from the previo settings.

Specifically, the goal of this investigation was to focus on the expected and actual adjustment of a select sample of students, engineering and science majors, at a public university in a rural midwestern setting known for its engineering and science programs. Previous studies utilizi this instrument have been completed in private schools in urban areas on the East Coast and have used students with liberal arts majors rather tha technically oriented curriculum. Yet, the results from the two normative universities indicate specific institutional effects. Additionally, the data in the present investigation were collected on campus in large group settings to avoid the self-selection factor in surveys that require retur mail response, which was the procedure employed in previous studies. The psychometric properties of both the expectations and actual adjustment forms of the SACQ were analyzed on this population. Timing of the data collection was made consistent with the previous studies, by assessing expectations in June and measuring actual adjustments during the eighth week of the first semester.

METHODS

Sample

A random sample of 302 matriculating freshmen was selected for this study. The 261 male and 38 female participants were students at three of six two-day freshman orientation programs conducted in June prior to the beginning of the fall semester. The mean age of the sample was 18, and as

mentioned previously, was primarily composed of engineering and science students.

Materials

The SACQ inventory used in this study was the 67 item form described b Baker, McNeil, and Siryk (1985). The instrument is based on the assumptic that adjustment to college is multifaceted and requires coping strategies that are differentially effective. The students rank their level of adjustment (full scale score) by estimating responses to the 67 statements on a 9-point rating continuum. Higher scores represent greater adjustment The four subscales of the inventory are academic adjustment (24 items), social adjustment (20 items), personal-emotional adjustment (15 items), an institutional attachment (15 items). The latter scale, institutional attachment, shares 9 of its items with other scales and was developed by discriminant analysis of students who remained at Clark University. Two items of the full scale are not any of the subscales but are related to overall adjustment.

The academic adjustment subscale refers to the various facets of the educational demands students experience in a college environment. The social adjustment subscale similarly assays facets of the interpersonal social demands. The personal-emotional subscale measures how a student is feeling psychologically and physically, while the institutional attachment subscale primarily assesses the students' feelings about the specific school or college being attended.

The actual adjustment form of the SACQ has desirable measurement properties. Cronbach's (1951) alpha, a measure of internal consistency reliability, has been found to range from the 70s for the personal-

emotional subscale, to the 80s for the other three subscales, to the 90s for the full-scale score. Norms have been established for the full scale and each of the subscales. The norms represent the typical freshman classes at Clark and Holy Cross Universities. The anticipated adjustment form consisted of a special set of instructions plus the prefix "I expect" listed on all seven pages of the questionnaire. The directions emphasize the importance of rating expectations and not aspirations or hopes. Baker McNeil, and Siryk (1985) reported Cronbach alphas for the anticipated adjustment scores in the 90s for the full scale and the social adjustment subscale, the 80s for the academic adjustment and attachment subscales, an the 70s for the personal-emotional subscale. Correlations among the subscales ranged from .36 to .87 with the highest relationships being among the social adjustment and institutional attachment subscales. This is not surprising in that these two subscales share eight items.

Procedure

The orientation program combines testing, information about the univer sity, academic advising, and course registration. The anticipated adjustment form of the SACQ was administered at the beginning of the program before the academic testing portion. Of the 202 students in the sample, 3 were dismissed because they failed to complete their questionnaires.

Follow-up with the actual adjustment form of the SACQ was conducted in mid-October. The students completed the questionnaire in freshman introductory courses in their major area of study. A total of 261 subjects (86 percent) completed both forms, and of these 247 had selected engineering and science majors. T-tests revealed no statistically significant differences between the engineering and science students who completed both forms

and those who took only the actual adjustment survey in October.

RESULTS

Psychometric data, including the means, ranges, variances, and F-tests contrasting the expected and actual adjustment scores on the SACQ on the science and technical students in the sample are presented in Table 1.

Insert Table 1 about here

The results are consistent with the previous findings from Clark University and Holy Cross University (see Baker, McNeil, & Siryk, 1985) in that students, as a group, experienced a substantial decrease in actual adjustment as compared to expected adjustment.

As can be seen in Table 2, students in the present study showed a

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Insert Table 2 about here

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particularly large discrepancy in the academic adjustment category. Further inspection of the data from the normative institutions and the university employed in the present study concluded that this was caused more by lower scores on actual adjustment rather than overly high expectations prior to entry. Thus, the engineering and science students in this sample experienced one aspect of the "freshman myth" more intensely than students in previous studies.

The intercorrelations among the four subscales of the SACQ are shown in Table 3 and suggest that the measure is relatively unidimensional. The Cronbach alphas on the anticipated adjustment form of the SACQ ranged from

Insert Table 3 about here

.76 on the personal/emotional adjustment scale to .87 on the social adjustment index. The alphas on the actual adjustment form were even higher ranging from .82 for the attachment index to .88 for the personal/emotional subscale. These findings regarding reliability for the total score and the correlations among the measures suggests that these adjustment constructs overlap. The lowest correlations were in the relationship between social and personal/emotional adjustment ($r = .46$, $p < .001$ and $r = .52$, $p < .001$) on both the expectations and actual adjustment forms, respectively, while the highest correlations were between the social and attachment subscales ($r = .85$, $p < .001$) on both forms which is not surprising given that these two subscales have several items in common. Thus, the persons surveyed tend to be either well adjusted or poorly adjusted on all four indices. Only a few participants scored high on one or two components and low on the others.

DISCUSSION

The results of this investigation of the SACQ for engineering and science students supports the use of this instrument as a measure of college adjustment for this group. The SACQ was undimensional for this population as it was in previous research with normative groups in other majors. The high intercorrelations among the subscales on both the expected and actual adjustment forms can be interpreted to suggest that the different indices are more like facets of the same adjustment process

rather than orthogonal constructs. In this sense, only the use of the ful scale score is warranted as the measure of adjustment to college. The use of the separate subscales should be continued to aid in the design and research on individually tailored remedial strategies.

The use of the "anticipated" versus "actual" adjustment versions of th SACQ was also found useful in the study. The engineering and science students appeared to have overestimated their ability to adjust to the different academic and developmental demands of college just as students with other majors did at other universities. The particularly inflated discrepancy or experience of the "freshman myth" on academic adjustment likely a product of the rigorous and demanding technical curriculum. As noted previously, the comparisons presented in Table 2 involved students representing different majors at the different universities. Further support for this argument of academic difficulty comes from the original data. The students in this study had anticipated academic adjustment scores equivalent to the sample in the 1985 study by Baker, McNeil, and Siryk. However, the actual academic adjustment scores of the students in the present study were much lower than the normative sample.

The method of data collection in this investigation was different than previous studies. The instrument was given to all students attending various freshmen orientation and registration program sessions rather than mailed out. Since the data were collected in this manner there was no self-selection factor in returning the instrument. The follow-up data were collected in freshmen classes also. A student with highly unrealistic expectations may be unwilling to return a questionnaire. The student with the greatest need for attention upon arrival may not respond to return mail

procedures. Our procedures may have been particularly useful to circumver these self-selection issues.

Adjustment to college is the product of the institutional environment (i.e., academic major other setting variables) and the person. Further investigations are especially needed on other separate academic majors and on the differences between two and four year schools, small versus large universities, and commuter versus residential campuses. Studies that investigate the discrepancy between anticipated and actual adjustment, the "freshman myth", should examine the relationships of high versus low discrepancies with variables such as Grade Point Average, living environment, and student leadership. There is particular need to identify institutions where there is little difference between expectations and reality. Discovering what these schools do for their freshmen may have important implications for student development personnel and college administrators.

Another important area for further research is intervention strategies to increase adjustment to college. This instrument, which has the potential for identifying problem students early in their college careers and research (Baker & Siryk, 1986) has shown that intervention can enhance adjustment. As the U.S. society becomes more technologically focused, counselors and psychologists need to train more professionals in these areas. Hence, professionals in the field should develop, implement, and evaluate the effects of intervention strategies designed to increase college adjustment for students entering these science- and math-related fields. Their needs may differ from those of students entering liberal arts, business, and educational fields.

Overall, the study has provided some additional support for the SACQ a:

an instrument for the measurement of adjustment to college. Given its potential in relation to the application of student development theory, th studies called for above should be conducted.

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TABLE 1

Anticipated and Actual Adjustment Scores

	Anticipated Adjustment				Actual Adjustment			
Adjustment Measure	Potential Range	Actual Range	M	SD	Actual Range	M	SD	F
Full Scale	67-603	327-571	450.5	45.6	255-550	411.3	55.2	132.44***
Academic	24-216	82-211	162.9	19.7	76-213	142.0	23.2	241.77***
Social	20-180	69-176	140.2	18.0	60-171	125.6	21.2	72.66***
Personal/Em	15-135	51-132	94.4	14.4	42-127	81.5	16.9	7.59**
Attachment	15-135	81-135	111.9	12.1	47-135	104.2	17.4	49.82***

D.F. = 1,246

**p < .01

***p < .001

TABLE 2

Comparison of Clark, Holy Cross and University of Missouri-Rolla Expected to Actual Score Discrepancies

Variable	Clark University	Holy Cross University	Univ. of MO Rolla
Full Scale	-25.0	-14.8	-38.5
Academic	-12.1	-12.1	-22.8
Social	-12.5	- 4.6	-11.4
Personal/Emot.	+ 1.7	+ 2.0	- 2.9
Attachment	- 6.5	- .1	- 7.7

TABLE 3

Unidimensionality and Intercorrelations among the SACQ Expectations and Actual Forms Subscales

Adjustment Variable	Alpha Exp.	Alpha Actual	Inter Correlations 1	2	3	4
1. Academic	.86	.87		.59***	.62***	.65***
2. Social	.87	.87	.53***		.46***	.85***
3. Personal/Emot.	.76	.82	.60***	.52***		.48***
4. Attachment	.79	.88	.67***	.85***	.53***	

Note: The expected adjustment subscale correlations are above the diagonal. The actual adjustment subscale correlations are below the diagonal.